

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 23 AUG 2005

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| Applicant's or agent's file reference<br>PCT 13/04   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) |  |
| International application No.<br>PCT/IT2004/000140   | International filing date (day/month/year)<br>22.03.2004   | Priority date (day/month/year)<br>28.04.2003 |
| International Patent Classification (IPC) or both national classification and IPC<br>B65H19/26 |  |  |
| Applicant<br>PERINI, Fabio   |  |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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| Date of submission of the demand<br><br>27.10.2004  | Date of completion of this report<br><br>23.08.2005   |
| Name and mailing address of the International preliminary examining authority:<br><br> European Patent Office - P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk - Pays Bas<br>Tel. +31 70 340 - 2040 Tx: 31 651 epo nl<br>Fax: +31 70 340 - 3016 | Authorized Officer<br><br>Haaken, W<br><br>Telephone No. +31 70 340-4278<br><br> |

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IT2004/000140

**1. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-8 as originally filed

**Claims, Numbers**

1-5 received on 27.07.2005 with letter of 13.07.2005-

**Drawings, Sheets**

1/9-9/9 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |             |     |
|-------------------------------|-------------|-----|
| Novelty (N)                   | Yes: Claims | 1-5 |
|                               | No: Claims  |     |
| Inventive step (IS)           | Yes: Claims | 1-5 |
|                               | No: Claims  |     |
| Industrial applicability (IA) | Yes: Claims | 1-5 |
|                               | No: Claims  |     |

**2. Citations and explanations**

**see separate sheet**

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**Re Item V**

Reference is made to the following documents:

- D1: DE 23 30 195 A (HOBEMA MASCHF HERMANN) 2 January 1975 (1975-01-02)  
D2: US-B1-6 328 248 (KAIPF WALTER) 11 December 2001 (2001-12-11)  
D3: US 2002/117575 A1 (GILMORE WILLIAM H ET AL) 29 August 2002 (2002-08-29)  
D4: US-A-4 099 435 (YOUNG ROGER W) 11 July 1978 (1978-07-11)

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**1st invention - claims 1,2**

D1 is regarded as closest prior art and discloses an

apparatus for causing paper webs to tear off within rewinding machines, the said web being provided, at regular intervals, with transverse perforation lines which subdivide the web into sheets joined to each other but able to be separated in correspondence of said perforation lines (see page 6, line 9-25), the apparatus comprising means to cause the tearing of the web upon the passage of a perforation line which separates the last sheet of a log in the course of formation from the first sheet of the next log to be formed, wherein said tearing means are of pneumatic type able to direct a jet of compressed air toward said line (cf. **first part of claim 1**).

The following technical features that

- said pneumatic means comprise a set of nozzles, associated, via corresponding solenoid valves, with a reservoir of compressed air, the said nozzles, with the respective solenoid valves and the reservoir being positioned internally to a web-feeding roller whose outer surface is delimited by a tubular jacket provided with a plurality of openings through which the nozzles are allowed to act (cf. **second part of claim 1**)

are considered to be obvious because a nozzle is used for a similar purpose in D2, see especially col. 8, line 58. "...a row of nozzles..." and the solenoids represent merely an equivalent actuating mechanism that the skilled person would select without an inventive

step being involved.

Consequently a first subject matter of invention is to be seen in the following special technical features (cf. **third part of claim 1**):

Said tubular jacket rotates about its longitudinal axis while said reservoir is stationary.

The subject matter of claim 1 is novel over the cited documents. The technical problem solved by the special technical feature is the prevention of leakges and to occur because of a rotating reservoir.

There is no hint in the cited documents that would prompt the skilled person to a solution as claimed. Hence, the subject matter of claim 1 involves an inventive step. The same applies accordingly to the subject matter of dependent claim 2.

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### **2nd Invention - Claim 3**

D3 (the references in parenthesis applying to this document) is regarded as closest prior art and discloses - see Fig. 1 - an

apparatus (36) for causing paper webs (23) to tear off within rewinding machines, the said web (23) being provided, at regular intervals, with transverse perforation lines (24) which subdivide the web into sheets joined to each other but able to be separated in correspondence of said perforation lines (24), the apparatus comprising means to cause the tearing of the web (23) upon the passage of a perforation line (24) which separates the last sheet of a log in the course of formation from the first sheet of the next log to be formed, wherein said tearing means are of pneumatic type (see passage 19: "...a high-speed air knife...") able to direct a jet of compressed air toward said line (cf. **first part of claim 3**).

Furthermore, the technical feature that

- said pneumatic means comprise a set of nozzles associated, via corresponding solenoid

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valves, with a reservoir of compressed air (cf. **second part of claim 3**)

is regarded as implicitly disclosed by D3 because the presence of a ("high speed air-knife") in said apparatus,

- with the respective solenoid valves and reservoir positioned externally (namely in the severing device 25) to a web feeding roller (21, 22) (cf. **third part of claim 3**).

Consequently a second subject matter of invention is to be seen in the following special technical features (cf. **fourth part of claim 3**):

The outer surface of the web-feeding roller is provided with a plurality of circumferential grooves in correspondence of which the nozzles are positioned.

The subject matter of claim 3 is novel over the cited documents. The technical problem solved by the special technical feature can be regarded as improving the efficiency of the apparatus by operating the air jet with a relatively low pressure and/or air volume rate in order to only locally (i.e. in the area above the grooves) initiate the tearing of the web. The subject matter of claim 3 is novel. Furthermore, there is no hint in the cited documents that would prompt the skilled person to a solution as claimed. Hence, the subject matter of claim 3 involves an inventive step.

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**3rd invention- Claim 4**

D1 (the references in parenthesis applying to this document) is regarded as closest prior art and discloses

a method for causing paper webs (1) to tear off within rewinding machines, comprising a step for feeding a continuous paper web (1) to a station in which the formation of a log takes place, the said web being provided with transverse pre-cutting or perforation lines at regular intervals, including interrupting the continuity of the web at a predetermined instant by the impact of a jet (3) of fluid onto the web, the jet being directed toward a perforation line of the web which separates the last sheet of a log in the course of a formation from the

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first sheet of the next log to be formed (cf. **first part of claim 4**).

Hence the subject matter of **claim 4** differs from the device disclosed by D1 in that

- the said method for delivering a fluid jet is operated subsequently to a step for the stretching of the web in the region interested by said jet (cf. **second part of claim 4**).

The feature that the cutting/tearing process of a web is performed in region where the web is stretched before the cutting/tearing is known per se, see D3, col. 2, starting from line 59: " The reduced air pressure in the tube 20 tends to draw the strips 10' into the tube slot. .... resulting in a stretching of the strips and thereby ensuring a positive, clean severing of the strips..."

However, starting from D1, there is no hint that would prompt the skilled person to consider a stretching of the web before performing the cutting/tearing process. The reasons are as follows: In the device disclosed by D1, the roller contains a jet with pressurized air supply.

The roller of the device disclosed by D4, on the contrary, contains a vacuum that makes the web adhere to it and causes it to be drawn into the slot, thereby effecting the stretching of the web.

Hence, the subject matter of claim 4 is novel. Furthermore, as the technical feature of vacuum of the roller disclosed by D4 on the one hand and the pressurized air supply of the roller disclosed by D1 on the other hand are in a way contradictory, it is not obvious for the skilled person to come to the method of claim 4. Hence, the subject matter of claim 4 also involves an inventive step. The same applies to dependent claim 5.

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CLAIMS (AMENDED)

- 1) Apparatus for causing paper webs to tear off within rewinding machines, the said web (2) being provided, at regular intervals, with transverse perforation lines which subdivide the web into sheets joined to each other but able to be separated in correspondence of said perforation lines, the apparatus comprising means to cause the tearing of the web (2) upon the passage of a perforation line (p) which separates the last sheet of a log (RO) in the course of formation from the first sheet of the next log to be formed, wherein said tearing means are of pneumatic type (SP) able to direct a jet of compressed air toward the said line (p), wherein said pneumatic means (SP) comprise a set of nozzles (7) associated, via corresponding solenoid valves (70), with a reservoir of compressed air (71), the said nozzles (7), with the respective solenoid valves (70) and the reservoir (71) being positioned internally to a web (2)-feeding roller (RA) whose outer surface is delimited by a tubular jacket (72) provided with a plurality of openings (73) through which the nozzles (7) are allow to act, characterized in that said tubular jacket (72) rotates about its longitudinal axis while said reservoir (71) is stationary.
- 2) Apparatus according to claim 1, characterized in that the said tubular jacket (72) is fixed to the driving shaft (8) of the roller (RA) by means of a flange (87) and is supported, on the side of the driving shaft (7), by a stationary part (80) with the interposition of a bearing (81), the said flange (87) exhibiting a seat for a conical casing (82) inside which an axial extension of the reservoir (71) is located, the said reservoir (71) being solid, on the opposite side, to a stationary part (84) and having a sleeve (85) positioned thereon on which the jacket (72) is mounted with the interposition of a

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corresponding bearing (86).

- 3) Apparatus for causing paper webs to tear off within rewinding machines, the said web (2) being provided, at regular intervals, with transverse perforation lines which subdivide the web into sheets joined to each other but able to be separated in correspondence of said perforation lines, the apparatus comprising means to cause the tearing of the web (2) upon the passage of a perforation line (p) which separates the last sheet of a log (RO) in the course of formation from the first sheet of the next log to be formed, wherein said tearing means are of pneumatic type (SP) able to direct a jet of compressed air toward the said line (p), wherein said pneumatic means (SP) comprise a set of nozzles (7) associated, via corresponding solenoid valves (70), with a reservoir of compressed air (71), characterized in that the said ~~pneumatic means (SP) comprise a set of nozzles (7) associated, by means of corresponding solenoid valves (70), with a reservoir of compressed air (71).~~ the said nozzles (7), with the respective solenoid valves and reservoir (71) ~~being~~ positioned externally to a web (2) - *<are>* feeding roller (RA) whose outer surface is provided with a plurality of circumferential grooves (76) in correspondence of which the nozzles (7) are positioned.
- 4) Method for causing paper webs to tear off within rewinding machines, comprising a step for feeding a continuous paper web (2) to a station in which the formation of a log (RO) takes place, the said web (2) being provided with transverse pre-cutting or perforation lines at regular intervals, comprising the step of interrupting the continuity of the web at a predetermined instant by the impact of a jet of fluid onto the web (2), the jet being directed toward a perforation line (p) of the web (2) which separates the last sheet of a log (RO) in the course of formation from the first sheet of the

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next log to be formed, characterized in that the said step for delivering a fluid jet is operated subsequently to a step for the stretching of the web (2) in the region interested by said jet.

- 5 5) Method according to claim 4, characterized in that the said fluid jet is directed from a roller (RA) of the web (2)-feeding system to the said line (p).